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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,717	09/17/2001	Kenneth Noddings	P051	7607

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MICHAEL O. SCHEINBERG
P.O. BOX 164140
AUSTIN, TX 78716-4140

EXAMINER	
CHAN, SING P	
ART UNIT	**PAPER NUMBER**
1734	

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/954,717	NODDINGS ET AL.	
	Examiner	Art Unit	
	Sing P. Chan	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-13,19-23,38 and 45-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-13,19-23,38 and 45-70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *2/2/06*.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 4 and 20 are objected to because of the following informalities: In claim 4, line 2, "a mold" should be "the mold" and in claim 20, line 1, transitional phase is missing, i.e. "comprising." Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Eide et al (U.S. 5,031,984).

Eide et al discloses a method of splicing optical fibers. The method includes providing a silicone elastomeric mold having a surface with precision grooves are formed, placing the fibers into the grooves on the mold (Col 4, lines 14-20), providing a glass substrate with an ultraviolet curable adhesive on a surface over the mold and sandwiching the optical fibers in place (Col 4, lines 20-22), wherein the adhesive has index matching the characteristics matching those of the optical fibers (Col 3, lines 61-66), curing the adhesive with ultraviolet light (Col 4, lines 29-31), and a sealant material is used to seal the fiber (Col 4,lines 58-60)

4. Claims 20-23, 38, 45-51, and 56-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Malavieille (U.S. 4,662,962).

Regarding claims 20-23, 38, 45-50, 56-61, and 66, Malavieille discloses a method of connecting optical fibers. The method includes providing a soft support with at least one fiber-receiving groove (Col 3, lines 46-51), providing a plate and a transparent setable liquid material with a refractive index matching the fibers, and placing the liquid into the groove (Col 4, lines 31-34), placing the ends of the optical fibers into the liquid medium, which has the same refractive index to allow for transmission of light between the two fibers by attenuating index jumps in the separation diopter, i.e. forming an optical path between the fibers (Col 4, lines 39-44), which is a waveguide, with the facing ends at an angle of 0 degree (Figure 4), radiating the adhesive with ultraviolet radiation to cure the adhesive or waveguide (Col 4, lines 63-68), burying the splice in resin, which is sticky, to protect the splice as a whole and then the splice is covered with various forms of plastic or metal protective cap or sleeve (Col 5, line 67 to Col 6, line 3), which will mold the resin to the shape of the cap or sleeve and adhere to the waveguide.

Regarding claim 51, the cured adhesive material is a waveguide.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, 55, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eide et al (U.S. 5,031,984) in view of Malavieille (U.S. 4,662,962).

Eide et al discloses a method of splicing optical fibers. The method includes providing a silicone elastomeric mold having a surface with precision grooves are formed, placing the fibers into the grooves on the mold (Col 4, lines 14-20), which will coupler for a light source such as a laser and a light detector (Col 4, lines 35-42), providing a glass substrate with an ultraviolet curable adhesive on a surface over the mold and sandwiching the optical fibers in place (Col 4, lines 20-22), wherein the adhesive has index matching the characteristics matching those of the optical fibers (Col 3, lines 61-66), curing the adhesive with ultraviolet light (Col 4, lines 29-31), and a sealant material is used to seal the fiber (Col 4,lines 58-60). Eide et al is silent as to the adhesive is the waveguide. However, providing the adhesive as the waveguide is well known and conventional a shown for example by Malavieille. Malavieille discloses a method of connecting optical fibers. The method includes providing a soft support with at least one fiber-receiving groove (Col 3, lines 46-51), providing a plate and a transparent setable liquid material with a refractive index matching the fibers, and placing the liquid into the groove (Col 4, lines 31-34), placing the ends of the optical fibers into the liquid medium, which has the same refractive index to allow for transmission of light between the two fibers by attenuating index jumps in the separation diopter, i.e. forming an optical path between the fibers (Col 4, lines 39-44), which is a waveguide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the adhesive with matching index to allow the adhesive to function as a waveguide as disclosed by Malavieille in the method of Eide et al to

provide a method of splicing optical fiber, which are cheap and easy to use. (See Malavieille, Col 1, lines 16-18)

7. Claims 4-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eide et al (U.S. 5,031,984) in view of Malavieille (U.S. 4,662,962) as applied to claim 1 above, and further in view of Daniel (U.S. 4,466,697).

Eide et al as modified by Malavieille discloses providing a plate and burying the splice in resin, which is sticky, to protect the splice as a whole and then the splice is covered with various forms of plastic or metal protective cap or sleeve (See Malavieille, Col 5, line 67 to Col 6, line 3), which will mold the resin to the shape of the cap or sleeve and adhere to the waveguide. But is silent as to applying a third or additional formable material to form an enclosure or other protecting structure. However, providing additional formable material to form an enclosure or protecting structure is well known and conventional as shown for example by Daniel. Daniel discloses a method for optical fiber. The method includes providing a protective coating to the fiber, wherein the coating may be several layers thick and may be formed of different transparent substances. (Col 7, lines 28-38)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide any additional formable material as protective coating as disclosed by Daniel in the method of Eide et al as modified by Malavieille to provide additional protective outer coating for the fiber. (See Daniel, Col 2, lines 34-37)

8. Claims 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eide et al (U.S. 5,031,984) in view of Malavieille (U.S. 4,662,962) as applied to claim 1 above, and further in view of Lebby et al (U.S. 5,389,312).

Eide et al as modified above is silent as to positioning the active optical component such as laser using bumps. However, using bumps to position components is well known and conventional as shown for example by Lebby et al. Lebby et al discloses a method of forming molded optical waveguides. The method includes using electrical contacts to position photonics devices such as photo detectors and light generating device fixed with bump bonding. (Col 5, lines 39-45)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use electrical contacts, which are bumps as disclosed by Lebby et al in the method of Eide et al as modified by Malavieille to automatically align the components. (See Lebby et al, Col 5, lines 43-45)

9. Claims 62-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malavieille (U.S. 4,662,962) as applied to claims 56, 61, and 66 above, and further in view of Bischel et al (U.S. 6,208,791).

Regarding claims 62, 63, 67, and 68, Malavieille as disclosed above is silent as to forming the waveguide by injecting the waveguide material under pressure or by screening or stenciling a wave guide material onto the mold plate. However, forming the waveguide by injecting or screening or stenciling a wave-guide material onto the mold plate is well known and conventional as shown for example by Bischel et al. Bischel et al discloses a method of forming an integrated optical microstructure. The

method includes applying a polymer binder into a pit or groove, which is chemically compatible with materials for waveguide structure fabrication by stencil printing, volumetric dispensing with a syringe, i.e. under pressure, inkjet printing or roto-gravure printing. (Col 10, lines 15-37)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the wave guide material by stencil printing, or volumetric dispensing with a syringe as disclosed by Bischel et al in the method of Malavieille to provide any variety of techniques for dispensing the waveguide material into the pit or groove. (See Bischel et al, Col 10, lines 22-25)

Regarding claims 64 and 65, Malavieille discloses the optical fiber can be separated by a chosen length (Col 7, lines 50-64), which the groove would provide the needed alignment and inherently would be aligned within a small margin such as less than 5 or 3 μm.

Regarding claims 69 and 70, Malavieille discloses an optical fiber and the waveguide is adhered to the support. (Col 5, lines 7-13 and Figure 5)

Response to Arguments

10. Applicant's arguments filed December 28, 2005 have been fully considered but they are not persuasive.

In response to applicant's argument of Eide et al does not teach formable light-carrying waveguide and no waveguide material between the fibers. The examiner disagrees, Eide et al recites the method is the same as the method developed by a

French company known as Alliance Technique Industrialle (Col 4, lines 11-14), which required the optical fibers be immersed into the UV adhesive with index matching characteristic, which is a waveguide material and there would be waveguide material disposed between the optical fibers.

In response to applicant's argument of Eide et al does not teach applying a cladding material over the waveguide, Eide et al does discloses a plastic over and a sealant material for covering the mounted body, i.e. cladding material.

In response to applicant's argument of Malavieille does not discloses a waveguide, the examiner disagrees. Malavieille discloses the adhesive includes "improves the transmission of the light between the two fibers by attenuating index jumps in the separation diopters," (Col 4, lines 38-44)which directs light between the fibers and therefore is a waveguide.

In response to applicant's argument of Malavieille does not disclose molding a support structure onto the waveguide, the examiner disagrees. Malavieille discloses the splice or waveguide is buried in resin for protection as a whole, i.e. a moldable support (Col 5, line 66 to Col 6, line 10), and is molded by stacking the plates together into a "sandwich." Malavieille does recite the instant invention. Furthermore, Malavieille does disclose separating the end of the fibers to provide a gap and therefore the waveguide material would be disposed between the optical fibers. (See Malavieille, Col 7, lines 50-64)

In response to applicant's argument of Eide et al requiring active alignment, however, the claims does not exclude active alignment and furthermore, Eide et al

recite active alignment for the active components and the optical fibers not the splicing of the optical fibers. (Col 6, lines 54-56) Eide et al does recite the instant invention.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rogner et al (U.S. 5,311,604) provide the teaching of forming waveguide between optical fibers with a mold and Coyle, Jr. et al (U.s. 5,026,411) discloses a method of coupling optical fibers by providing a housing subassemblies, enclosing the optical fibers with the housing subassemblies and filling the subassemblies with a junction media, which not only transmits light to or from the coupler fiber, but also secures the portion of the coupler fibers into the subassemblies.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sing P. Chan whose telephone number is 571-272-1225. The examiner can normally be reached on Monday-Thursday 7:30AM-11:00AM and 12:00PM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher A. Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chan Sing Ko

SPC

CHRIS FIORILLA
SUPERVISORY PATENT EXAMINER
AU 1734